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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/036,505 | 01/07/2002 | Jeong Yeal Kim | 025311-0113 | 5148 |
| 22428 | 7590 | 08/25/2004 | EXAMINER | |
| FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007 | | | COURSON, TANIA C | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2859 | |

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/036,505

Applicant(s)

KIM, JEONG YEAL

Examiner

Tania C. Courson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07JUL03(Fig.1) & 07JAN02(Fig.2-9) is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Cheng (US 5,546,179).

Cheng discloses in Figures 1-8, an apparatus and method for mapping the edge of a workpiece comprising:

With respect to claim 1:

- a) an optical section (Fig. 1, optical sensor device 24) for radiating exposure light toward the edge of a semiconductor wafer (Fig. 1), the semiconductor wafer having a resist thereon (column 7, lines 22-39);
- b) a sensor (Fig. 1, optical sensor device 24) for detecting the height of the edge (Fig. 1), and;
- c) a focus position control mechanism (Fig. 1, focus position control system 46 and column 8, lines 10-39) for controlling the focal position of exposure light originating from the optical section on the basis of value detected by the sensor (Fig. 1).

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With respect to claim 2:

- a) the sensor includes a focal sensor (Fig. 1, optical sensor device 24 and column 8, lines 10-39) for sensing a distance between the optical section and the edge (Fig. 1), and;
- b) the focus position control mechanism controls a focusing position of exposure light (Fig. 1, optical sensor device 24 and column 8, lines 10-39) such that the focus of exposure light originating from the optical section matches the height of an edge surface (Fig. 1).

With respect to claim 3:

- a) wherein the focus position control mechanism includes a position control mechanism (Fig. 1, optical sensor device 24 and column 8, lines 10-39) for controlling a relative position between the optical section and the edge (Fig. 1).

With respect to claim 4:

- a) wherein the focus position control mechanism includes a zooming mechanism (Fig. 1, optical sensor device 24 and column 8, lines 10-39) for controlling the focal distance of the exposure light originating from the optical section (Fig.1).

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With respect to claim 9:

- a) a chuck (Fig. 1, chuck 16) for retaining the semiconductor wafer thereon (Fig. 1), and;
- b) a drive (Fig. 1, support shaft 18 and motor 20) for rotating the chuck so that the radiating exposure light irradiates only on an annular portion of the edge (Fig. 1).

With respect to claim 11:

- a) an optical section (Fig. 1, optical sensor device 24) for radiating exposure light toward the edge of a semiconductor wafer (Fig. 1);
- b) a sensor (Fig. 1, optical sensor device 24) for detecting the height of the edge (Fig. 1), and;
- c) a focus position control mechanism (Fig. 1, focus position control system 46 and column 8, lines 10-39) for controlling the focal position of exposure light originating from the optical section on the basis of value detected by the sensor (Fig. 1).

With respect to method claims 5-8, 10 and 12: The method steps claimed will be met during the normal operation of the apparatus stated above.

Response to Arguments

3. Applicant's arguments filed on May 28, 2004 have been fully considered but they are not persuasive.

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4. In response to newly added claims 11 and 12, with respect to the applicant's argument that the Cheng reference fails to show that the focal position of exposure light is controlled on the basis of the height of the edge detected by the sensor, the Cheng reference does, furthermore in addition to Figure 1, show in Figure 4 (and column 9, lines 38-58) that the focal position is based on the height of the edge of the wafer.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The prior art cited on PTO-892 and not mentioned above disclose an exposure apparatus:

Nishi (US 2003/0128348)

Nishi (US 2002/0018192)

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tania C. Courson whose telephone number is (571) 272-2239. The examiner can normally be reached on Monday-Friday from 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached on (571) 272-2245.

The fax number for this Organization where this application or proceeding is assigned is (703) 872-9306.



DIEGO F.F. GUTIERREZ
SUPERVISORY PATENT EXAMINER
GROUP ART UNIT 2859

TCC
August 20, 2004